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8) (Amended) A panel according to claim 1, wherein said corner-covering element is present on the whole perimetric edge of said panel.

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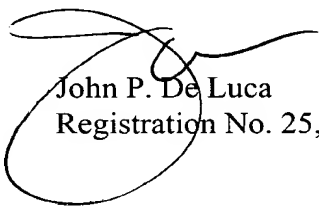
Please remove multiple dependencies from the claims. If any multiple dependent claims remain after amendment, such multiple dependent claims should refer only to the next previous claim.

**REMARKS**

This Amendment is for the purpose of removing multiple dependencies and reference numerals from the claims and for placing the claims in appropriate U.S. format.

Allowance of the claims is earnestly solicited.

Respectfully submitted,

  
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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

1) (Amended) [Method] A method for moulding wooden or similar panels with radiused bottom corners, said panels being coated with thermoformed polymer sheets, [characterized in that it comprises the following operations] comprising the steps of:

- [-] removing some material from at least one side of a panel [(2, 100)] in correspondence with the bottom edge of said panel so as to remove the corner and create one or more grooves in which to fit an inserted element;
- [-] applying on this panel, on the top surface and on all the side surfaces of at least as far as the milled edge, a thermoformed coating [(5) composed] of a suitable sheet of polymer resin or similar material;
- [-] inserting a corner-covering element [(6, 10, 20, 30, 40)] in one or more cavities in the panel formed by the above-mentioned removal of material, this element having a profile conjugate with the profile obtained by removal of the bottom edge of said panel.

2) (Amended) [Panel] A panel according to claim 1<sub>a</sub>[], characterized in that] wherein said corner-covering element [(6, 10, 20, 30, 40) presents] is a radiused external profile so as not to be sharp.

3) (Amended) [Panel] A panel according to claim 2<sub>a</sub>[], characterized in that] wherein said corner-covering element is made of plastic.

4) [Panel] A panel according to claim 2<sub>a</sub>[], characterized in that] wherein said corner-covering element is made of aluminum.

5) (Amended) [Panel] A panel according to claim 2<sub>i</sub>[], characterized in that] wherein said corner-covering element is made of wood.

6) (Amended) [Panel] A panel according to claim 2<sub>i</sub>[], characterized in that] wherein said corner-covering element is made of ABS.

7) (Amended) [Panel] A panel according to claim 2<sub>i</sub>[], characterized in that] wherein said corner-covering element is made of rubber.

8) (Amended) [Panel] A panel according to [any of the claims from 1) to 7), characterized in that] claim 1, wherein said corner-covering element is present on the whole perimetric edge of said panel.

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METHOD FOR MOULDING RADIUSED BOTTOM CORNERS ON WOODEN OR SIMILAR PANELS COATED WITH THERMOFORMED POLYMER SHEETS AND PANELS OBTAINED WITH THAT METHOD

The invention concerns a method for moulding the radiused bottom corners <sup>on</sup> of wooden or similar panels coated with thermoformed polymer sheets. The invention is also applicable to the panels obtained with that method.

It is a known fact that the thermoforming technique used in the woodwork sector concerns the production of panels for use in various furnishing sectors, such as desk tops, kitchen worktops or other uses. This method consists in the application of a coating of polymer sheets, that is of plastic laminate products in sheets which may be sheets of PVC, polypropylene, polyester or similar products which cover panels of wood chipboard, MDF or similar, that is of products which are not made of solid wood. These <sup>coating sheets</sup> panels are applied by means of softening due to heating and subsequent adhesion by means of a membrane or vacuum press onto the panel on which a coating of glue has previously been applied.

Thermoforming alone ensures covering of the panel on three sides but not on the bottom side, due to the application technique in which a press is used. In fact, a sheet of polymer of the same type is applied beforehand on the bottom side of the panel that is to be covered, so that the subsequent application of the sheet on the three sides, as described above, closes the panel on all six surfaces forming a parallelepiped or similar figure. For this <sup>important</sup> ~~very~~ reason, between the top covering and the bottom covering a corner is created which may be sharp or at least irritating for anyone resting his or her hands on the bottom edge of the panel. Just consider the frequent possibility of the panel being used as a top for a table or writing desk. Think how often the hands rest or rub against the bottom edge, with the possibility of irritation or even injury.

*The US-A-5,085,027 document discloses a furniture panel with a core covered by veneers. This panel has generally rounded edge with a low radius portion which is impossible to well cover with the veneers. For this reason the low radius edge is machined to create an housing for projection plug; said plug, after insertion, is machined to provide a smooth continuous surface with the panel edge.*

The aim of the invention is to create a method for moulding wooden or similar panels which overcomes the limits of present-day technique and the problem

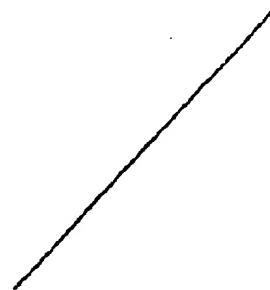
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caused by the making of the bottom corner presenting the dangerous characteristics described above.

It is also intended that the panel made with this method should be inexpensive and have a pleasant appearance.

- 5 The aims mentioned above and others which will be better indicated below are achieved through the implementation of a method for moulding wooden or

Moulded bottom corners on



similar panels coated with thermoformed polymer sheets, characterised by the fact that it comprises the following phases:

*the main features of which are according to claim 1 -*

- removing some material from at least one side of a panel in correspondence with the bottom edge of said panel, so as to remove the corner and create one or more grooves in which to fit an inserted element;
- applying on this panel, on the top surface and on all the side surfaces at least as far as the beginning of the area where material is removed, a thermoformed coating composed of a sheet of polymer resin or similar material;
- inserting a corner-covering element with a profile conjugate with one or more cavities in the panel formed by the above-mentioned removal of material, this element having an external profile that matches perfectly the surfaces cut during the previous removal operation.

According to <sup>a preferred embodiment of</sup> the invention, the corner-covering element may be made of various materials such as solid wood, aluminium, plastic, ABS, rubber or other materials and may be conveniently fitted either on only one side or on all four sides of the panel, in correspondence with the bottom edge.

The moulding method to which the invention refers and some examples of application of the panels will be described below as illustration, without intent of limitation, and with the aid of the drawings in which:

- fig. 1 shows in section a part of the panel made with the moulding method of the invention;
- fig. 2 shows the panel made with the moulding method of the invention during the moulding of the panel;
- fig. 3 shows the corner-covering element applied to the panel of fig. 1 and 2;
- fig. 4, 5, 6, 7, 8 and 9 show a partial section of panels with different corner-covering elements implementing the invention.

It is stated that hereinafter the term "wooden panel" is used to refer to a panel made of chipboard, MDF, or similar or comparable materials, used in the woodwork industry as a replacement for wood itself.

With reference to fig. 2, it can be observed that in the panel, indicated as a whole by 2, the bottom corner has been removed beforehand by milling, creating a groove, indicated by 3, which develops along the whole depth of the side 21 of the panel. The bottom surface 22 of the panel 2 has been covered beforehand with a covering element 4 which is generally composed of a polymer sheet of PVC, polypropylene or polyester. The removal of the bottom

corner of the panel 2 to create the groove 3 may be done either before or after application of the bottom panel 4. The panel 2 with the milling 3 performed and with the bottom covering 4 is placed on the bed of a vacuum or membrane press and a sheet of polymer material 5 is placed close to the top surface 23 of the panel 3 to form the coating of the three still uncovered sides of the panel 2. Thermoforming, which is carried out with the aid of a membrane or vacuum press not shown in the figure, leaves the sheet 5 as shown in fig. 1. As may be seen in this figure, the bottom edge of the coating sheet 5 reaches the edge which circumscribes the area where material has been previously removed. However, there is nothing to prevent the bottom edge of the coating 5 from being inserted for a certain length into the removed area 3. Once the top sheet has been applied, as the bottom sheet is already present, the corner-covering element, indicated by 6, may be inserted in the groove 3. At the end of the operation, as shown in fig. 1, the panel 2 is therefore coated on top with the sheet 5, at the bottom with the sheet 4, while the corner-covering element 6 is on the part where coatings 5 and 4 meet; as may be seen, the corner-covering element is well radiused and avoids all the problems typical of the technique used previously.

Fig. 4 shows a corner-covering element 10 different from the one in the previous example, with horizontal milling which creates the grooves 7 and 8 which have horizontal development, parallel to the surface of the panel. The fact that there are two grooves instead of only one gives greater grip for the corner-covering element. Fig. 5 shows the same corner-covering element 10, but applied vertically, that is with the milled grooves 7' and 8' developed vertically instead of horizontally.

In fig. 6, in another application of the invention, the panel 100 presents grooves arranged in a line inclined with respect to the horizontal. More precisely, the grooves 11 and 12 are created in the bottom edge of the panel and the area of removal 13, so that the corner-covering element 20 matches the panel 100 following an oblique direction.

Fig. 7 shows another variation in production of a corner-covering element 30, also arranged in an oblique line with respect to the plane of the panel 100, on which panel there are cavities 14, 15 and 16 that are mated to corresponding ridges on the corner-covering element 30.

Fig. 8 shows a C-shaped corner-covering element, indicated by 40, which may

be positioned on the bottom part of the panel 100 after having made two horizontal milled grooves 18 and 19. These grooves house the corresponding ridges on the panel 40.

Fig. 9 shows the same corner-covering element 40 applied vertically and not horizontally to the panel 100, on the ridges 21 and 22.

Of course a substantially infinite plurality of variations in shape of the corner-covering element is possible, and also of the ridges on the corner-covering element which fit into the corresponding grooves made by milling on the bottom part of the panel. All these variations have in common the fact that each bottom part of the corner-covering element is radiused in such a way as to avoid all irritation.

In short, it can be observed that the part of the corner-covering element which fits into the milled grooves on the bottom part of the panel has a profile conjugate with these grooves, so that the connection which is made with glue or equivalent systems is a connection which reconstructs the panel completely without any loss of material.

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## CLAIMS

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1) Method for moulding radiused bottom corners on wooden or similar panels having a core coated with thermoformed polymer sheets, characterized in that it comprises the steps of:

- 5 - machining said panel (2, 100), with or without the bottom polymer sheet, in correspondence of the bottom corner to be grown radiused creating one or more grooves where housing a radius shaped corner-covering element;
- applying a thermoformed coating sheet of polymer resin, or the like, on the like, on the top surface of this panel in such a way that said are one or more grooves remain open;
- 10 - inserting said radius shaped corner-covering element (6, 10, 20, 30, 40) in said one or more grooves, said radius shaped corner-covering element having a profile conjugate with the profile of said one or more grooves of said panel.

15 2) Panel according to claim 1), characterized in that said corner-covering element (6, 10, 20, 30, 40) presents a radiused external profile so as not to be sharp.

3) Panel according to claim 2), characterized in that said corner-covering element is made of plastic.

20 4) Panel according to claim 2), characterized in that said corner-covering element is made of aluminium.

5) Panel according to claim 2), characterized in that said corner-covering element is made of wood.

25 6) Panel according to claim 2), characterized in that said corner-covering element is made of ABS.

7) Panel according to claim 2), characterized in that said corner-covering element is made of rubber.

30 8) Panel according to any of the claims from 1) to 7), characterized in that said corner-covering element is present on the whole perimetric edge of said panel.

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